CLAIMS

1. A CT scanner for scanning of an object comprising:

a tunnel;

a conveyor for moving the object through the tunnel;

a gantry rotatable around the tunnel;

an x-ray source on the gantry for providing an x-ray beam perpendicular to the tunnel;

a first plurality of detectors on the gantry positioned a first distance from the x-ray source; and

a second plurality of detectors on the gantry positioned a second distance from the x-ray source, wherein the second distance is less than the first distance.

2. The CT scanner of claim 1, wherein one of the detectors in the first plurality of detectors is positioned within the x-ray beam adjacent to one of the detectors in the second plurality of detectors.

3. The CT scanner of claim 1 further comprising a third plurality of detectors on the gantry positioned the second distance from the x-ray source.

4. The CT scanner of claim 3, wherein:

one of the detectors in the first plurality of detectors is positioned within the x-ray beam adjacent to one of the detectors in the second plurality of detectors; and another one of the detectors in the first plurality of detectors is positioned within the x-ray beam adjacent to one of the detectors in the third plurality of detectors.

5. The CT scanner of claim 4, wherein:

the x-ray beam intersects an entire cross section of the tunnel; and

the first, second, and third pluralities of detectors are positioned on the gantry so that the entire x-ray beam intersects at least one detector.

6. The CT scanner of claim 1, wherein a distance between adjacent detectors in the first plurality of detectors is different than a distance between adjacent detectors in the second plurality of detectors.

7. The CT scanner of claim 1, wherein an angle between beams from the x-ray source to adjacent detectors in the first plurality of detectors is the same as an angle between beams from the x-ray source to adjacent detectors in the second plurality of detectors.

8. The CT scanner of claim 1, further comprising a third plurality of detectors on the gantry positioned a third distance from the x-ray source.

9. The CT scanner of claim 8, wherein:

the x-ray beam intersects an portion of a cross section of the tunnel less than the entire cross section of the tunnel; and the first, second, and third pluralities of detectors are positioned on the gantry so that the detectors intersect the entire x-ray beam.

10. The CT scanner of claim 9, wherein the x-ray beam intersects one-half of the cross section of the tunnel.

11. The CT scanner of claim 1, further comprising at least one computer for receiving data from the detectors and reconstructing at an image of at least a portion of the object.

12. The CT scanner of claim 11, further comprising a data link between the detectors on the gantry and the at least one computer not positioned on the gantry.

13. The CT scanner of claim 12, wherein the data link provides a constant stream of detector data from the detectors to the at least one computer.

14. The CT scanner of claim 1, wherein each detector in the first and second plurality of detectors includes:

a first photodiode layer responsive to x-ray energy at a first energy level, the first photodiode layer having a first x-ray reception area; and

a second photodiode layer responsive to x-ray energy at a second energy level higher than the first energy level, positioned behind the first photodiode layer relative to the x-ray source, and having a second x-ray reception area larger than the first x-ray reception area.

15. The CT scanner of claim 14, wherein each detector further includes a shielding layer between the first and second photodiode layers.

16. The CT scanner of claim 15, wherein first x-ray reception area and second x-ray reception areas are sized so that the x-ray flux levels for the first photodiode layer and second photodiode layer are substantially equal.

17. A CT scanner for scanning of an object comprising:

a tunnel;

a conveyor for moving the object through the tunnel;

a gantry rotatable around the tunnel;

an x-ray source on the gantry for providing an x-ray beam perpendicular to the tunnel, wherein the x-ray beam includes at least two energy levels;

a first plurality of detectors responsive to a first one of the at least two energy levels positioned on the gantry to intersect a first portion of the x-ray beam; and

a second plurality of detectors responsive to a second one of the at least two energy levels positioned on the gantry to intersect a second portion of the x-ray beam separate from the first portion.

18. The CT scanner of claim 17, wherein the first plurality of detectors includes:

a first subset of detectors positioned a first distance from the x-ray source; and

a second subset of detectors positioned a second distance from the x-ray source, wherein the second distance is less than the first distance.

19. The CT scanner of claim 18, wherein the second plurality of detectors includes:

a third subset of detectors positioned a third distance from the x-ray source; and

a fourth subset of detectors positioned a fourth distance from the x-ray source, wherein the fourth distance is less than the third distance.

20. The CT scanner of claim 17, wherein the first plurality of detectors further includes:

a third subset of detectors positioned a third distance from the x-ray source, wherein the third distance is less than the second distance.

21. A baggage processing system comprising:

a plurality of CT scanners for scanning a bag, each of the CT scanners including a computer for processing data from the CT scanner and for reconstructing an image of least a portion of the bag;

at least one operator review station for displaying a reconstructed image; and a network for transferring a reconstructed image from at least one CT scanner to the at least one operator review station for display.

22. The baggage processing system of claim 21, wherein the computer in each of the CT scanners includes means for detecting a potential threat in a bag based upon reconstructed image, and

wherein a reconstructed image is transferred to the at least one operator review station upon detection of a potential threat.

23. The baggage processing system of claim 22, wherein at least one of the plurality of CT scanners is located at an airline check-in desk.

24. The baggage processing system of claim 22, wherein at least one of the plurality of CT scanners is located at an airport security check-point.

25. The baggage processing system of claim 22, wherein at least one of the plurality of CT scanners is located at an airport curb-side check-in area.

26. The baggage processing system of claim 22, wherein at least one of the plurality of CT scanners is located at a location other than an airport to which bags are to be transported.

27. A baggage check-in system comprising:

a first check-in station for passengers to check-in for a flight and to check baggage;

a second check-in station for passengers to check-in for a flight and to check baggage; and

a CT scanner positioned between the first check-in station and the second check-in station.

28. The baggage check-in system of claim 27, wherein the CT scanner includes:

a tunnel positioned between the first check-in station and the second check-in station; and

a conveyor through the tunnel to move bags from a first side of the first and second check-in stations to a second side of the first and second check-in stations; and

wherein the baggage check-in system further comprises a baggage handling system for removing bags from the second side of the first and second check-in stations for transport to an aircraft.

29. The baggage check-in system of claim 27, wherein the CT scanner includes a computer for detecting a potential threat in a bag prior to moving a bag to the baggage handling system.

30. A method for processing checked bags at an airport comprising the steps of:

at a plurality of locations in the airport performing the steps of:

scanning bags and reconstructing at least one image of a portion of each bag;

detecting a potential threat based upon reconstructed images;

distributing bags to airplanes if a potential threat is not detected; and

transferring the at least one image to a review location if a potential threat is detected; and

at the review location, performing the steps of:

displaying the transferred at least one image for review by an operator.

31. The method for processing checked bags of claim 30, further comprising the steps of:

at the review location performing the steps of:

receiving in indication from the operator of a threat or not a threat based upon the displayed image; and

transmitting the indication to the location which provided the image; and

at the plurality of locations performing the steps of:

receiving the indication from the review location;

distributing a bag to an airplane based upon an indication of not a threat; and

preventing distribution of the bag to an airplane upon indication of a threat.